इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS/ISO 105-A08 (2001): Textiles - Tests for colour fastness : Part A08 Vocabulary used in colour measurement [TXD 5: Chemical Methods of Test]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

भारतीय मानक

वस्त्रादि — रंग के पक्केपन के परीक्षण

भाग ए08 रंग मापन में प्रयुक्त पारिमाणिक शब्दावली

Indian Standard

TEXTILES — TESTS FOR COLOUR FASTNESS

PART A08 VOCABULARY USED IN COLOUR MEASUREMENT

ICS 677.016.47 : 620.191.73.05

© BIS 2006

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

November 2006

Price Group 4

NATIONAL FOREWORD

This Indian Standard (Part A08) which is identical with ISO 105-A08 : 2001 'Textiles — Tests for colour fastness — Part A08 : Vocabulary used in colour measurement' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Chemical Methods of Test Sectional Committee and approval of the Textile Division Council.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

The composition of Technical Committee responsible for the preparation of this standard is given in National Annex A.

In reporting the results of a test or analysis made in accordance with this standard, if the final value observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

TEXTILES — TESTS FOR COLOUR FASTNESS

PART A08 VOCABULARY USED IN COLOUR MEASUREMENT

1 Scope

This part of ISO 105 specifies the terms and definitions on colour measurements that are used throughout ISO 105. These definitions are intended to be used only within the context and scope of ISO 105.

2 Terms and definitions

2.1

chroma

attribute of colour used to indicate the degree of departure of the colour from a grey of the same lightness

NOTE C^*_{ab} is the metric chroma defined in the CIELAB equation.

2.2

CIE 1976, L^*, a^*, b^* colour space

CIELAB colour space

transform of CIE tristimulus values into an approximately uniform, three dimensional, opponent colour space

NOTE Its opponent variables are lightness-darkness (L^*), redness-greenness (a^*) and yellowness-blueness (b^*). The last two may be further transformed into those of chroma (C^*_{ab}) and hue (h_{ab}).

2.3

CIE 1976, L^*, a^*, b^* colour difference

CIELAB colour difference

ΔE^*_{ab}

Euclidean distance between the points representing a test specimen and its reference specimen in CIELAB colour space

2.4

CIE chromaticity coordinates

ratios of each of the members of a set of CIE tristimulus values to their sum

NOTE The corresponding symbols are x_{10}, y_{10} and z_{10} for X_{10}, Y_{10} and Z_{10}, and x, y and z for X, Y and Z. Since $x_{10} + y_{10} + z_{10} = 1$ and $x + y + z = 1$, x_{10} and y_{10} or x and y suffice to define chromaticity.

2.5

CIE standard observer data

relative amounts of three defined colour stimuli required, when mixed additively, by the average observer to match radiation at each wavelength of the visible spectrum under defined viewing conditions

NOTE The CIE defines the 1931 (2°) standard colorimetric observer and 1964 (10°) supplementary standard colorimetric observer.

2.6
CIE standard illuminant data

spectral power distributions of illuminants which the CIE has defined as standard

NOTE Those relevant to ISO 105 are designated A (representative of tungsten lighting), C (average daylight) and D_{65} (average daylight including the ultraviolet region). The CIE also defines the F series (F1 to F12) of recommended illuminants representative of various fluorescent discharge lamps.

2.7
CIE tristimulus values

amounts of three non-real reference colours required to give a colour match to the colour stimulus considered and defined by the CIE for the CIE 1931 (2°) and 1964 supplementary (10°) standard colorimetric observers and for particular conditions of illumination

NOTE Corresponding symbols are X, Y and Z for the 2° and X_{10}, Y_{10} and Z_{10} for the 10° observers.

2.8
colour change

change in colour of any kind, whether in lightness, chroma or hue, or any combination of them, discernible by comparing a test specimen with its corresponding reference specimen

2.9
colorimeter
tristimulus colorimeter

instrument designed to measure the colour of an object directly in terms of CIE tristimulus values

NOTE Applications of colorimeters within ISO 105 are limited.

2.10
colourant

chemical substance which is applied to a substrate for the express purpose of changing the reflectance or transmittance of visible light

2.11
ΔE

⟨colour-difference evaluation⟩ single number defining the total colour difference between a test specimen and its reference specimen

NOTE There are many equations for evaluating colour difference and the derivation of ΔE is identified by superscript and/or subscript character(s) [e.g. ΔE_{cmc} for CMC (Colour Measurement Committee) colour difference and $\Delta E^{*}_{\mathrm{ab}}$ for CIELAB colour difference].

2.12
depth

that colour quality which is primarily associated with an increase in the quantity of colourant present, all other conditions (substrate, colourant(s), application method and viewing conditions) remaining the same

2.13
fluorescent whitening agent
FWA

colourant that absorbs near-ultraviolet radiation and emits primarily violet-blue radiation

NOTE This causes a yellowish material to which it has been applied to appear whiter. This term is preferred to optical brighting agent (OBA).

2.14
grey scale

series of neutrally coloured pairs of chips, one pair showing zero contrast and the other pair showing increasing contrast, used in the visual assessment of the contrast between reference and test specimen pairs (e.g. in fastness testing) for the purpose of assigning a numerical rating

NOTE There are, in common use, two types of grey scales, one for assessing change in colour (see ISO 105-A02) and another for assessing degree of staining (see ISO 105-A03).

2.15
hue

attribute of a visual sensation by which the colour of a specimen is judged to be similar to one of the perceived colours, red, yellow, green or blue, or to a combination of two of them

2.16
infrared radiation

IR radiation

radiant energy for which the wavelengths of the monochromatic components are longer than those for visible radiation and less than about 1 mm

NOTE The limits of the spectral range of infrared radiation are not well defined and may vary according to the application. Committee E-2.1.2 of the CIE distinguishes in the spectral range between 780 nm and 1 mm:

- IR-A: 780 nm to 1400 nm
- IR-B: 1,4 µm to 3,0 µm
- IR-C: 3,0 µm to 1 mm

2.17
lightness

attribute of colour perception by which a non-self-luminous body is judged to reflect more or less light

NOTE L^*_{ab} is the metric lightness defined in the CIELAB equation.

2.18
perfect reflecting diffuser

hypothetical material perfectly diffusely reflecting 100 % of visible radiation striking it

NOTE The perfect reflecting diffuser is the basis of calibration of reflectance-measuring instruments.

2.19
photochromism

qualitative designation for a reversible (or at least partially reversible) change in colour of any kind (whether a change in lightness, hue or chroma) which is immediately noticeable upon termination of light exposures when the exposed area of a specimen is compared to the unexposed area

NOTE A non-preferred synonym is phototropism.

2.20
semi-axes

lS_{L}, cS_{C}, S_{H}

individual dimensions of the CMC ellipsoid which are used to calculate a $\Delta E_{\mathrm{cmc}(l:c)}$ value

NOTE The variables l and c quantify the tolerances for lightness differences and chroma differences, relative to hue differences.

2.21
spectral power distribution

SPD

distribution by wavelength of radiation emitted from a source or modelled by an illuminant over the relevant wavelength span of radiation

2.22
spectral reflectance

the fraction (0 to 1) or percentage (0 to 100) of incident radiation reflected by a given material (and neither absorbed nor transmitted by it) as a function of wavelength

2.23
spectral transmittance

the fraction (0 to 1) or percentage (0 to 100) of incident radiation passing through a given material (and neither absorbed nor reflected by it) as a function of wavelength

2.24
spectrophotometer

instrument for measuring the reflectance or transmittance of light (or other radiation) by an object at one or more wavelengths in the spectrum

2.25
standard depth scale

one of a number of sets of coloured standards, the members of each of which are of different brightness and hue but have been accepted as being of equal depth and which enable dyeing, fastness and other properties of colourants to be compared on a uniform basis

NOTE The series in most frequent use in textile applications are designated 1/25, 1/12, 1/3, 1/1 and 2/1 standard depths (where each given multiple expresses the relationship of the depth of the series to 1/1 standard depth), and the navy and black standard depth series.

2.26
tinctorial strength

effectiveness of a given mass of colourant in colouring a given mass of given material by means of a given application process

2.27
ultraviolet (UV) radiation

radiant energy for which the wavelengths of the monochromatic components are shorter than those for visible radiation and more than about 100 nm

NOTE The limits of the spectral range of ultraviolet radiation are not well defined and may vary according to the application. Committee E-2.1.2 of the CIE distinguishes in the spectral range between 100 nm and 400 nm:

- UV-A: 315 nm to 400 nm
- UV-B: 280 nm to 315 nm
- UV-C: 100 nm to 280 nm

2.28
visible radiation

any radiation capable of causing a visual sensation

NOTE 1 The limits of the spectral range of visible radiation are not well defined and may vary according to the application. The lower limit is generally taken to be between 380 nm and 400 nm and the upper limit to be between 700 nm and 780 nm.

NOTE 2 The CIE defines colour-matching functions for the 2° and 10° observers for the wavelength range of 380 nm to 780 nm.

2.29
whiteness

attribute of colour perception by which an object colour is judged to approach a preferred white

Bibliography

[1] ISO 105-A01, *Textiles — Tests for colour fastness — Part A01: General principles of testing.*

[2] ISO 105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour.*

[3] ISO 105-A03, *Textiles — Tests for colour fastness — Part A03: Grey scale for assessing staining.*

NATIONAL ANNEX A

(*National Foreword*)

COMMITTEE COMPOSITION

Chemical Methods of Test Sectional Committee, TX 05

Organization	*Representative(s)*
Textiles Committee, Mumbai	Dr G. S. Nadiger (***Chairman***) Shri E. Viswambharam (*Alternate*)
Bapuji Institute of Engineering & Technology, Davangere	Dr H. L. Vijaykumar Dr K. Murugesh Babu (*Alternate*)
Central Institute for Research on Cotton Technology, Mumbai	Dr (Ms) C. R. Raje Dr R. H. Balasubramanya (*Alternate*)
Central Pollution Control Board, Delhi	Dr M. Q. Ansari Shri Ajay Aggarwal (*Alternate*)
Clariant India Ltd, Mumbai	Dr V. G. Nayak
Directorate of Standardization (Production & Supplies), New Delhi	Lt-Col (Dr) R. Srivastava Lt-Cdr B. Manjunath (*Alternate*)
In personal capacity (*2 Siddhi Vinayak Cooperative Group Housing Society, Swatantrya Veer Savarkar Marg, Prabhadevi, Dadar, Mumbai*)	Shri M. D. Dixit
Indian Institute of Carpet Technology, Bhadohi	Prof (Dr) K. K. Goswami Shrimati Betty Das Gupta (*Alternate*)
Indian Jute Industries' Research Association, Kolkata	Shri A. K. Banerjee
Jaya Shree Textiles, Rishra	Shri Abhey Nair Shri Pawan Sharma (*Alternate*)
L. N. Chemical Industries, Mumbai	Shri Ketan L. Gandhi
Maniklal Verma Textile Institute, Bhilwara	Dr N. K. Mathur
Man-Made Textile Research Association, Surat	Dr Sandeep R. Naik Shri M. G. Patel (*Alternate*)
Ministry of Defence (DGQA), Kanpur	Lt-Col P. P. Naidu Shri Rama Yadav (*Alternate*)
Ministry of Defence (R&D), Kanpur	Ms Archana Vyas Ms Priyanka Katiyar (*Alternate*)
Office of the Textile Commissioner, Mumbai	Shri R. A. Lal
Premier Colorscan Instruments Pvt Ltd, Thane	Shri Raymond Ramrajkar Shri D. I. Desai (*Alternate*)
Rajasthan Spinning and Weaving Mills Ltd, Noida	Shri K. D. Joshi Shri Vijay Yadav (*Alternate*)
Reliance Industries Ltd, New Delhi	Shri P. K. Badami Shri Sanjeev Israni (*Alternate*)
SNDT Women's University, Mumbai	Dr (Ms) Bharati A. Patwardhan
Suditi Industries Ltd, Mumbai	Shri R. Chinraj Shri Rajendra Gaikwad (*Alternate*)
Sunil Industries Ltd, Mumbai	Shri Vinod G. Lath Shri Ramesh Khanna (*Alternate*)
Texan Lab, Mumbai	Shri Ullhas Nimkar Shri Rahul Bhajekar (*Alternate*)
Textiles & Engineering Institute, Ichalkaranji	Prof S. K. Laga Prof S. S. Chinchwade (*Alternate*)
The Bombay Millowner's Association, Mumbai	Shri Mahesh Sharma

Organization	*Representative(s)*
The Bombay Textile Research Association, Mumbai	Shri B. S. Acharya Shri P. R. Mistry (*Alternate*)
The South India Textile Research Association, Coimbatore	Shri D. Balasubramanian
The Synthetics & Art Silk Mills' Research Association, Mumbai	Shri K. S. Taraporewala Shri D. L. Shah (*Alternate*)
University Department of Chemical Technology, Mumbai	Prof M. D. Teli Prof S. R. Shukla (*Alternate*)
Veermata Jeejabai Technological Institute, Mumbai	Prof K. D. Gawand
Wool Research Association, Thane	Shrimati G. P. Rane Shri V. C. Panse (*Alternate*)
BIS Directorate General	Shri M. S. Verma, Director and Head (TXD) [Representing Director General (*Ex-officio*)]

Member Secretary
Shri Anil Kumar
Joint Director (Textiles), BIS

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc: No. TXD 05 (0793).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *website* : www.bis.org.in

Regional Offices:		Telephones
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	2323 7617 2323 3841
Eastern	: 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	2337 8499, 2337 8561 2337 8626, 2337 9120
Northern	: SCO 335-336, Sector 34-A, CHANDIGARH 160022	260 3843 260 9285
Southern	: C.I.T. Campus, IV Cross Road, CHENNAI 600113	2254 1216, 2254 1442 2254 2519, 2254 2315
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400093	2832 9295, 2832 7858 2832 7891, 2832 7892

Branches: AHMEDABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. PARWANOO. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM. VISAKHAPATNAM.

Printed at Simco Printing Press, Delhi